January 9, 2006

Mr. Paul Gunter
Nuclear Information and Resource Service
1421 16th Street NW., Suite 404
Washington, DC 20036

Dear Mr. Gunter:

This letter responds to the petition that you filed with the Executive Director for Operations pursuant to Section 2.206 of Title 10 of the *Code of Federal Regulations* (10 CFR) on May 12, 2005, submitted on behalf of Nuclear Information and Resource Service, Citizens Awareness Network, Indian Point Safe Energy Coalition, North Carolina Waste Awareness and Reduction Network, Alliance for Affordable Energy, and Blue Ridge Environmental Defense League (the petitioners).

In the petition, the petitioners requested that the U.S. Nuclear Regulatory Commission (NRC) take the following actions:

1) Collect information through generic communications with nuclear industry and specifically with the named reactor sites to determine the extent of condition of the inoperable fire barriers; including the requirement that the licensees conduct a full inventory of the type of Hemyc/MT to include the amount in linear and square footage, its specific applications, and the identification of safe shutdown systems, which are currently unprotected by the noncompliance and an assessment of the safety significance of each application;

2) The communication should require, at minimum that the above-named sites provide justification for operation in noncompliance with all applicable fire protection regulations; and

3) With the determination that any and/or all of the above-mentioned sites are operating in an unanalyzed condition and/or that assurance of public health and safety is degraded, promptly order a suspension of the license or a power reduction of the affected reactors until such time as it can be demonstrated that the licensees are operating in conformance with all other applicable fire protection regulations.

On June 27, 2005, the NRC staff acknowledged receiving your petition and stated, pursuant to 10 CFR 2.206 that the petition was being referred to the Office of Nuclear Reactor Regulation for appropriate action and that it would be acted upon within a reasonable time. In addition, your request for immediate action and the request to expand the scope to cover other fire barriers issues were denied by the NRC. When the Hemyc test results became available, the staff examined whether there was an immediate and significant risk to safety. Because fire detection, prevention, and suppression measures are already in place, or lack of such features had been previously approved by the NRC, to minimize both the probability of occurrence and

consequences of a fire that could prevent the performance of safe shutdown functions, the NRC staff concluded that continued plant operation while corrective actions are implemented will not pose an undue risk to public health and safety.

Representatives of the petitioners held a teleconference with the Petition Review Board (PRB) to discuss the petition on June 1, 2005. The PRB considered the results of that discussion when considering the petitioner's request for action and determining the review schedule for the petition. The transcript of this teleconference was treated as a supplement to the petition and is available in the Agencywide Documents Access and Management System (ADAMS) for inspection under Accession No. ML051640452 at the Commission's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland.

In a letter dated June 27, 2005, the NRC staff informed you that the petition was being treated pursuant to 10 CFR 2.206 of the NRC's regulations and that the requested actions were being reviewed by the Office of Nuclear Reactor Regulation for appropriate action.

The NRC staff sent a copy of the proposed Director's Decision (DD) to you for comment on October 20, 2005. The NRC staff did not receive any comments on the proposed DD.

The final DD addresses the petitioners' requested actions as follows: With regard to request nos. 1 and 2, the NRC staff has granted the petitioner's request through the generic communication process. Specifically, the NRC staff is planning to issue a Generic Letter (GL) to all licensees asking them to provide detailed information about the use of Hemyc/MT in their nuclear power plants, and their programmatic controls that ensure that other fire barrier types will be assessed for potential degradation and adverse effects. With respect to Request No. 3, the NRC staff is planning to review the responses from all affected plants in detail and will take appropriate actions to resolve the issues with the use of Hemyc/MT material commensurate with the safety significance of the protected systems. The comment period for the proposed GL expired on September 23, 2005. The GL will be issued after the NRC's internal review process is completed.

A copy of DD-06-01 will be filed with the Secretary of the Commission for the Commission to review in accordance with 10 CFR 2.206(c). As provided for by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the DD within that time. The documents cited in this letter and the enclosed DD are available in ADAMS for inspection at the Commission's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, and from the ADAMS Public Library component on the NRC Web site http://www.nrc.gov/reading-rm/adams.html (the Electronic Reading Room).

I have also enclosed a copy of the notice of "Issuance of Director's Decision Under 10 CFR 2.206" that has been filed with the Office of the *Federal Register* for publication.

Please feel free to contact Mr. Chandu Patel, petition manager, at 301-415-3025, to discuss any questions related to this petition.

Sincerely,

/RA/
J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Docket Nos. 50-244, 50-247, 50-271, 50-286,
50-313, 50-333, 50-368, 50-369, 50-370,
50-382, 50-400, 50-413, 50-414, and 50-261

Enclosures: 1. DD-06-01
2. *Federal Register* Notice

Please feel free to contact Mr. Chandu Patel, petition manager, at 301-415-3025, to discuss any questions related to this petition.

Sincerely,

/RA/
J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Docket Nos. 50-244, 50-247, 50-271, 50-286,
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Enclosures: 1. DD-06-01
2. *Federal Register* Notice

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Package: ML053400055 NRR-106

OFFICE	PSPB/PM	DORL/PM	PSPB/LA	PSPB/BC(A)	Tech Editor	DPR/D	NRR/D
NAME	DWilliams	CPatel	DBaxley	DCollins	PKleene	CGrimes	JDyer
DATE	01/03/06	12/15/05	12/12/05	12/15/05	12/20/05	12/21/05	01/09/06

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DD-06-01

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

James E. Dyer, Director

In the Matter of	) Docket Nos. 50-244, 50-247, 50-271,
	) 50-286, 50-313, 50-333, 50-368, 50-369,
Carolina Power and Light Company	) 50-370, 50-382, 50-400, 50-413, 50-414,
Constellation Energy	) And 50-261
Duke Power and Light Company	)
Entergy Nuclear Operations, Inc.	)
	)
Plant Names: As Shown Below	) License Nos: As Shown Below
	)
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DIRECTOR'S DECISION UNDER 10 CFR 2.206

I. Introduction

By letter dated May 12, 2005, Mr. Paul Gunter, on behalf of Nuclear Information and Resource Service, Citizens Awareness Network, Indian Point Safe Energy Coalition, North Carolina Waste Awareness and Reduction Network, Alliance for Affordable Energy, and Blue Ridge Environmental Defense League (the petitioners) filed a petition pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 2.206. The petitioners requested that the U.S. Nuclear Regulatory Commission (NRC) engage emergency enforcement actions to modify and/or suspend operating licenses for Shearon Harris Nuclear Power Station Unit 1, Docket No. 50-400, License No. NPF-63; H. B. Robinson Unit 2, Docket No. 50-261, License No. DPR-23; McGuire Units 1 and 2, Docket No. 50-369, License No. NPF-9; Catawba Units 1 and 2, Docket Nos. 50-413 and 50-414, License Nos. NPF-35 and NPF-52; Ginna, Docket No. 50-244, License No. DPR-18; James A. FitzPatrick, Docket No. 50-333, License

No. DPR-59; Indian Point Units 2 and 3, Docket Nos. 50-247 and 50-286, License Nos. DPR-26 and DPR-64; Vermont Yankee, Docket No. 50-271, License No. DPR-28; Waterford Unit 3, Docket No. 50-382, License No. NPF-38; and Arkansas Nuclear One Units 1 and 2, Docket No. 50-313 and 50-368, License No. DPR-51 and NPF-6, with regard to potential violations of NRC regulations for fire protection under 10 CFR Part 50. Specifically, the petition requested emergency enforcement under 10 CFR 2.206 to include the following actions by the Commission:

1) Collect information through generic communications with nuclear industry and specifically with the named reactor sites to determine the extent of condition of the inoperable fire barriers; including the requirement that the licensees conduct a full inventory of the type of Hemyc/MT to include the amount in linear and square footage, its specific applications, and the identification of safe shutdown systems, which are currently unprotected by the noncompliance and an assessment of the safety significance of each application;
2) The communication should require, at minimum that the above-named sites provide justification for operation in noncompliance with all applicable fire protection regulations; and
3) With the determination that any and/or all of the above-mentioned sites are operating in an unanalyzed condition and/or that assurance of public health and safety is degraded, promptly order a suspension of the license or a power reduction of the affected reactors until such time as it can be demonstrated that the licensees are operating in conformance with all other applicable fire protection regulations.

As the basis for the requests, the petitioners cited a meeting on April 29, 2005, held by NRC with all stakeholders to discuss the performance of 1-hour (Hemyc) and 3-hour (MT) fire barriers for electrical raceways during full-scale fire testing. In that meeting the NRC staff informed all stakeholders that the Hemyc/MT electrical raceway fire barrier system (ERFBS) failed to protect electrical cables for 1 hour/3 hours in fire tests that were performed to the American Society of Testing and Materials (ASTM) Standard E119. The petitioners' request was also based on the following conclusions made by the petitioners: (1) The same Hemyc/MT fire barrier wrap systems as installed in the above nuclear plants fail to assure the protection of the control room operations for achieving safe shutdown of the reactor in the event of a significant fire, (2) NRC has not quantified the full extent of the amount of Hemyc/MT fire barrier material in terms of linear and/or square footage deployed per fire protection regulations, and NRC has not determined the safety significance of this deployment for safe shutdown systems that are not currently protected by these fire barriers, and (3) the petitioners believe that the above listed nuclear power stations are operating in violation of NRC fire protection requirements and in an unanalyzed condition resulting in a degradation of defense-in-depth fire protection and safe shut down in the event of a significant fire.

By teleconference on June 1, 2005, the petitioners provided information to the NRC's Petition Review Board as further explanation and support for their petition. The transcript of this teleconference was treated as a supplement to the petition and is available in the Agencywide Documents Access and Management System (ADAMS) for inspection under Accession No. ML051640452 at the Commission's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible from the ADAMS Public Electronic Reading Room on the NRC Web site http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located

in ADAMS, should contact the NRC PDR Reference staff by telephone at 1-800-397-4209, 301-415-4737, or by e-mail to pdr@nrc.gov.

During the teleconference, the petitioners also requested that this petition be modified to consider this fire barrier material in context of an overall picture of the extent of condition for fire barrier protection under Section III.G.2 of Appendix R to 10 CFR Part 50 (i.e., not just the Hemyc/MT ERFBS). As a basis for this request, the petitioners stated that they don't believe it is justifiable for NRC or industry to wait on a potential ruling with regard to operator manual action.

In a letter dated June 27, 2005, the NRC informed the petitioners that their request was received and that the issues in the petition were being referred to the Office of Nuclear Reactor Regulation for appropriate action. However, the petitioners' request for immediate action and the request to expand the scope to cover other fire barriers issues were denied by the NRC. When the test results became available, the NRC staff examined whether there was an immediate and significant risk to safety. Because fire detection, prevention, and suppression measures are already in place, or lack of such features had been previously approved by the NRC, to minimize both the probability of occurrence and consequences of a fire that could prevent the performance of safe shutdown functions, the NRC staff concluded that continued plant operation while corrective actions are implemented would not pose an undue risk to public health and safety.

The NRC staff sent the proposed Director's Decision (DD) to the petitioners for comment on October 20, 2005. The NRC staff did not receive any comments on the proposed DD.

II. Discussion

NRC's concern with the performance of fire barriers at nuclear power plants began with the failure of Thermo-Lag to pass performance tests in October 1989 at Southwest Research

Institute. The tests were done for the Gulf States Utilities Company after visually observing degradation of Thermo-Lag at River Bend Station.

Because of questions about the ability of 1-hour- and 3-hour-rated Thermo-Lag fire barrier material to perform its specified function, and because of the widespread use of Thermo-Lag in the nuclear industry, the NRC issued Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers," December 17, 1992, to inform licensees of the Thermo-Lag test results and to request that licensees implement appropriate compensatory measures and develop plans to resolve any noncompliances with 10 CFR 50.48.

In response, licensees reviewed their fire protection safe shutdown plans to determine if corrective actions were needed. Some licensees had made conservative commitments and installed Thermo-Lag in locations where it was not needed to satisfy NRC requirements, therefore, no corrective actions were required. Where fire barrier materials were required, licensees took one or a combination of the following corrective actions:

- Rerouted cables through other fire areas so that redundant safe shutdown trains were not located in the same area;
- Replaced Thermo-Lag, or the affected material, with an alternative rated fire barrier material;
- Upgraded the installed fire barriers to a rated configuration; or
- Concluded that certain Thermo-Lag barriers were no longer required.

Subsequently, deficiencies were also identified in other fire barrier materials. In 1993, for example, Kaowool installed as a 1-hour-rated fire barrier was found to be unable to pass fire endurance tests as a rated fire barrier. In response, the NRC staff reassessed previous NRC staff reviews of Kaowool fire barriers and informed the industry and the Commission of the potential failure of Kaowool to perform as intended and suggested additional testing of Kaowool

(SECY-99-204; ADAMS Accession No. ML992810028). To resolve the issue, the industry took voluntary corrective actions.

In August 1993, the Nuclear Energy Institute (NEI) formed a Fire Barrier Review Ad Hoc Advisory Committee to address the adequacy of fire barrier materials other than Thermo-Lag. The Committee reviewed the original testing of the fire barrier, Hemyc (performed in the early 1980s in Spain), and concluded that Hemyc was differently constructed than Thermo-Lag 330-1, and therefore was not subject to the same failure modes as Thermo-Lag 330-1. In May 1994, this review was documented in the NEI report, "Documentation of the Adequacy of Fire Barrier Materials in Raceway Applications Vis-á-vis Failure Characteristics Inherent to the Thermo-Lag 330-1."

However, beginning in late 1999, three plant-specific findings by the NRC staff raised concerns about the performance of Hemyc and MT fire barriers. Hemyc and MT, manufactured by Promatec, Inc., were installed at Nuclear Power Plants (NPPs) to protect circuits and instrumentation cables in order to meet regulatory requirements and in accordance with plant-specific commitments. In June 2001, the NRC initiated confirmatory fire tests in response to Task Interface Agreement 99-028 (ADAMS Accession No. ML003736721), after concluding that existing testing was likely insufficient to qualify Hemyc or MT as rated fire barriers. In March/April 2005, the NRC conducted confirmatory testing of both materials at the Omega Point Laboratories in San Antonio, Texas. The NRC tests were based on ASTM Standard E119 time-temperature conditions and the current NRC guidance in GL 86-10, Supplement 1, for typical Hemyc and MT arrangements used in NPPs. The test results indicated that when tested using the GL 86-10, Supplement 1, guidance, neither Hemyc nor the MT fire barrier systems would provide their rated fire barrier protection for the configurations tested.

On April 1, 2005, the NRC issued Information Notice (IN) 2005-07, "Results of Hemyc Electrical Raceway Fire Barrier System Full Scale Fire Testing." This IN describes the results

of the NRC-sponsored confirmatory testing of Hemyc. However, the NRC staff recognized that additional evaluations would be needed to determine whether regulatory compliance exists in light of the concerns identified in IN 2005-07. On April 29, 2005, the NRC staff held a public meeting with licensees and interested members of the public to discuss the Hemyc and MT test results and the NRC staff's intentions to take prompt additional regulatory action to ensure that appropriate measures are under way for compliance with 10 CFR 50.48 requirements at affected NPPs.

The NRC staff recognizes the concern expressed by the petitioners. The NRC staff is concerned that the Hemyc and MT fire barriers may not provide the level of fire endurance intended by licensees and that licensees that use Hemyc or MT may not be complying with NRC regulations or plant-specific licensing bases. Section 50.48 of 10 CFR requires that each operating NPP have a fire protection plan that satisfies General Design Criterion (GDC) 3, "Fire protection," of 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants." GDC 3 requires that structures, systems, and components important to safety be designed and located to minimize, in a manner consistent with other requirements, the probability and effect of fires and explosions. Fire protection features required to satisfy 10 CFR 50.48 include features to limit fire damage to structures, systems, or components important to safety so that the capability to shut down the NPP safely is ensured.

The NRC has issued guidance on acceptable methods of satisfying the regulatory requirements of GDC 3 in the Branch Technical Position (BTP), Auxiliary and Power Conversion Systems Branch BTP 9.5-1, Standard Review Plan, Section 9.5-1, and GLs. GL 92-08 specifically included the NRC staff's expectation that licensees would review existing fire barrier configurations credited for 10 CFR Part 50, Appendix R, compliance, based on earlier concerns with Thermo-Lag.

Licensees of plants licensed to operate before January 1, 1979, must comply with their fire protection requirements as specified in 10 CFR Part 50, Appendix R, and licensees of plants licensed to operate after January 1, 1979, must comply with the approved fire protection program incorporated into their operating license. In light of information provided in IN 2005-07 and other guidance, the NRC staff expects licensees to reevaluate their fire protection programs, implement appropriate compensatory measures, and develop plans to resolve any noncompliances within a reasonable timeframe. All licensees should consider the impact of fire barrier degradation on the operability of affected equipment and assess the impact on plant safety.

If a nonconforming condition is identified, licensees can use at least two methods, individually or in combination, to restore compliance. One way is to make plant modifications such as replacing the Hemyc or MT fire barriers with an appropriately rated fire barrier material, upgrading the Hemyc or MT to a rated barrier, or rerouting cables or instrumentation lines through another fire area. Another way to address the issue is to perform a technical evaluation that considers defense-in-depth and safety margins and serves as the technical basis for a licensing basis change as follows:

- Plants licensed to operate before January 1, 1979, may request an exemption from 10 CFR Part 50, Appendix R, in accordance with the requirements of 10 CFR 50.12, "Specific exemptions."
- Plants licensed to operate after January 1, 1979, must meet the fire protection requirements in the operating license condition. The standard license condition allows a licensee to make changes to the approved fire protection program without prior NRC staff approval "if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire." GL 86-10, "Implementation of Fire Protection Requirements," provides guidance on performing and documenting these

changes. The plants that adopt a risk-informed approach should submit a license amendment in accordance with 10 CFR 50.90.

On July 25, 2005, the NRC staff issued a GL for comment in the *Federal Register*. The comment period expired on September 23, 2005. The NRC staff intends to issue the final GL by March 31, 2006, after NRC's review of comments is completed. The GL will request all licensees who credit Hemyc or MT for compliance to provide information regarding the extent of the installation; whether the material is degraded or nonconforming; and any compensatory actions in place to provide equivalent protection and maintain the safe shutdown function of affected areas of the plant in light of the recent findings of potential degradation of Hemyc and MT. Licensees will be requested to provide evaluations to support conclusions that they are in compliance with regulatory requirements for the Hemyc and MT applications. Licensees that cannot justify their continued reliance on Hemyc or MT are requested to provide a description of corrective actions taken or planned and a schedule for milestones including when full compliance will be achieved. In addition, licensees will be requested to identify and discuss all applications that are considered degraded but operable, including a basis for this conclusion.

It is expected that the compensatory and corrective actions shall be implemented in accordance with existing regulations commensurate with the safety significance of the degraded or nonconforming condition. The NRC staff expects that all licensees will fully restore compliance with 10 CFR 50.48, and submit the required documentation to the NRC, by December 1, 2007.

III. Conclusion

The NRC staff shares the concerns expressed by the petitioners. The NRC staff is addressing the Hemyc/MT material performance issues in an expeditious manner. With regard to response to Request Nos. 1 and 2, the NRC staff has granted the petitioners' request

through the generic communication process. Specifically, as discussed above, the NRC staff is planning to issue a GL to all licensees asking them to provide detailed information about the use of Hemyc/MT in their NPPs. With respect to Request No. 3, the NRC staff is planning to review the responses from all affected plants and will take appropriate actions to resolve the issues with the use of Hemyc/MT material commensurate with the safety significance of the protected systems.

As provided in 10 CFR 2.206(c), a copy of this DD will be filed with the Secretary of the Commission for the Commission to review. As provided for by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time.

Dated at Rockville, Maryland, this 9th day of January 2006.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/
J. E. Dyer, Director
Office of Nuclear Reactor Regulation